COMPLEX MUNICIPAL SOLID WASTE SORTING: APPROACHES AND METHODS

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Household waste treatment is one of the most pressing problems of our time. Waste processing and waste utilization is multifactorial ecological, economic, technological and social problem.

Despite numerous researches of issues related to the management in the sphere of waste treatment by Vyhovsky H.P., Gubanova O.R., Zinovchuk N.V., Makovetska J.M., et al. for today it is needed to develop the complex system of sorting of municipal solid waste (MSW), which will significantly reduce their input to the landfill.

Total solid waste collection and their subsequent separation in a solid waste complex is ineffective due to poor quality of sorted recycled materials, low percentage of extracting resource-valuable components from waste, significant capital intensity of mechanized sorting and others. Decentralized sorting prevents mixing of organic fractions with other resource-valuable fractions and can occur through:

1) sorting of household waste when using containers of general use (usually in different colors and shape);

2) sorting of waste followed by individual collection of sorted materials by the specially created company;

3) sorting of waste followed by deliver up the sorted secondary raw materials to collection points [1].

The second method of decentralized sorting is implemented through individual service of each family by specialized enterprise, organizations, and other objects where household waste are created. There are alternative variants of this method. In particular, individual collection of sorted components can be done by setting individual modernized containers for each object of service, or by collecting resource-valuable fractions by phone call.

Collecting of resource-valuable fractions by a telephone call, can be realized by the following methods:

- individual service of each object by a telephone call to collect sorted resource-valuable fractions (such as waste paper and plastics);
- individual service of each object by a telephone call to collect sorted organic part of household waste.

The first method lies in the fact that a person should sort only a few resource-valuable fractions and by a telephone call invite employee who will take the package with these materials.

For organizations and institutions this method is quite appropriate because the proportion of waste paper, polymers and glass is large enough. For example, for Sumy city proportion of these components is respectively 36%, 9% and 7%.

For the housing sector, this method has some drawbacks:

- Firstly, the number of fractions of secondary raw materials, that can be sorted by population, is limited - 2-3.
- Secondly, the proportion of waste paper, polymers and glass for the residential sector is not as big as, for example, the proportion of organic matter.
- Thirdly, the inability of the extracting organic part after mixing it with other components of the waste, the proportion of which is large enough; for example, in Sumy for multi-storey buildings sector it makes up 39%, for the private sector - 25%.

For the private sector and multi-storey buildings is advisable to use the second method. Proportion of organic matter for multi-storey buildings sector it makes up 39%, for the private sector - 25%. Sorting of organic matter can not only reduce the amount of

waste, but also to get further biogas and compost. Also, it creates the preconditions for centralized sorting of residual dry fractions [2].

The second method lies in the fact that a person should sort just organic part of solid waste and by telephone call invite employee who will take the package with organics.

It will allow not only to sort organic fraction, but also to generate a stream of dry residual waste and make maximum sorting of resource-valuable components of solid waste at the material recovery station - using a centralized approach.

So, using this approach to sort municipal solid waste not only provides minimal capital investment in creating associated infrastructure (to separate waste into organic and inorganic), but also provide an opportunity to obtain resource-valuable component - organic matter and provide conditions for centralized sorting residual mass of municipal solid waste.

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